

Becker's sign and many other eponyms in aortic regurgitation

Daiki Shako  and **Tatsuya Kawasaki**  *

Department of Cardiology, Matsushita Memorial Hospital, Sotojima 5-55, Moriguchi, Osaka 570-8540, Japan

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Aortic regurgitation is characteristic of diastolic reflux of blood from the aorta into the left ventricle, causing a rapidly increasing and subsequently collapsing pulse. These unique haemodynamics create

numerous eponymous signs, such as Corrigan, Duroziez, Quincke, Traube, and de Musset,^{1,2} which are often missed in the modern era of advanced imaging techniques. The dynamic pulse in this condition

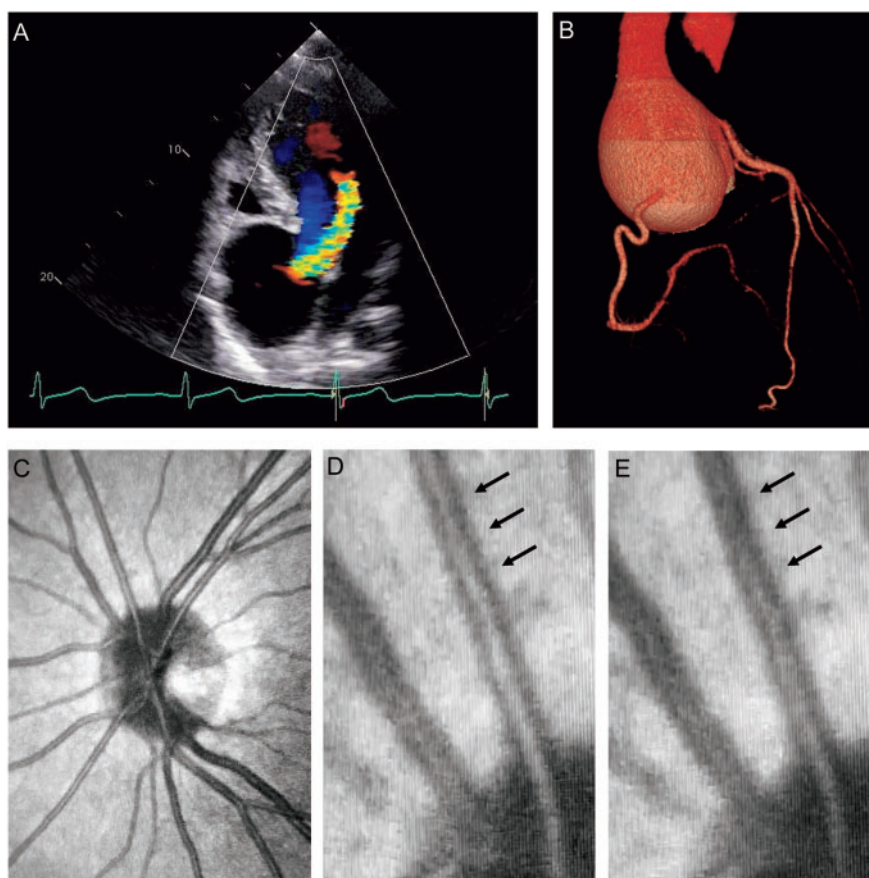


Figure 1

* Corresponding author. Tel: +81-66992-1231, Email: js-k@wf6.so-net.ne.jp

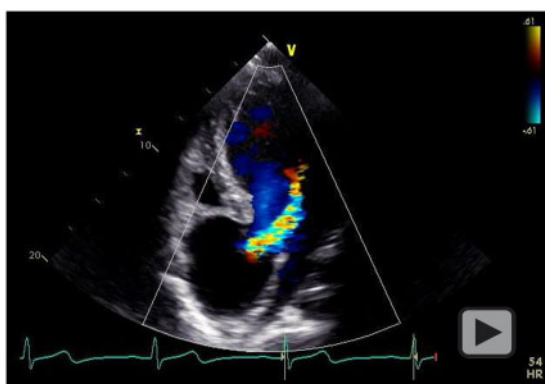
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Learning points

- Patients with aortic regurgitation may show unique physical signs and many medical eponyms.
- The presence of visible pulsation of retinal arteries or Becker's sign was clearly recorded in our case.



Video 1 Colour Doppler mode of the apical four-chamber view shows severe aortic regurgitation and annulo-aortic ectasia.

may affect fields other than internal medicine, such as ophthalmology, although it is rarely recognized.

We report a 28-year-old man who was referred to the cardiology department because of a 1-year history of fatigue on effort and heart murmurs. His medical history was unremarkable except for childhood asthma and he was not taking any medications at presentation. There was no family history of cardiovascular disease or connective tissue diseases. The vital signs were unremarkable except for a lower diastolic pressure with a high pulse pressure of 60 mmHg (Hill's sign). The physical examination was notable for bounding pulses in the carotid artery (Corrigan pulse with pulsus bisferiens), alternating flushing and blanching of the nail beds (Quincke's pulse), the entire distal phalanx of the thumb extending beyond the ulnar border of the clenched fist (Steinberg sign, also known as the thumb sign), funnel chest, arachnodactyly, and grade 3/IV systolic ejection murmur and diastolic murmur with diastolic rumble (Austin Flint murmur) on chest auscultation.

Electrocardiography demonstrated left ventricular high voltage without ST-T segment changes (Supplementary material online, S1) and chest radiography revealed mild cardiomegaly. The complete blood cell counts were normal, as were the results of renal and liver function tests, electrolyte balance, and thyroid function test. The level of brain natriuretic peptide was 53 pg/mL (reference value, ≤ 18.4). The troponin T level was 0.008 ng/mL (reference value, ≤ 0.014). Echocardiography showed normal ventricular dimensions and function with severe aortic regurgitation due to aortic annulus enlargement (Figure 1A and Video 1), which was confirmed on computed tomography without coronary stenosis (Figure 1B).

Ophthalmologic examination showed no abnormal findings, such as lens dislocation, high myopia, glaucoma, retinal detachment, or cataract, but visible pulsation of retinal arteries (Becker's sign) was confirmed through snapshot fundus photography and continuous video recording (Figure 1C–E and Video 2). The patient underwent



Video 2 A continuous fundus video recording shows notable pulsation of retinal arteries, as known as Becker's sign.

valve-sparing aortic root replacement, the David procedure, with Gelweave™ Valsalva 28 mm (Vascutek Ltd, Glasgow, UK). A diagnosis of Marfan syndrome was suspected based on his physical features; the patient is scheduled to undergo genetic analysis.

Supplementary material

Supplementary material is available at *European Heart Journal - Case Reports* online.

Consent: The authors confirm that written consent for submission and publication of this case report including images and associated text has been obtained from the patient in line with COPE guidance.

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